Environment and Sustainable Development

PART 1
Objective Questions

• Multiple Choice Questions

1. Which of the following conditions is/are necessary for sustainable development?
(a) Conservation of natural resources
(b) Eco-friendly environment
(c) Use of renewable resources on sustainable basis
(d) All of the above

Ans. (d) All of the above

2. Out of the following, which is not the function of environment?
(a) It supplies resources
(b) It assimilates waste
(c) It sustains life by providing non-genetic and non-biodiversity
(d) It provides aesthetic services like scenery

Ans. (c) The environment includes the sun, soil, water, and air, which are essential for human life. It sustains life by providing genetic and biodiversity.

3. The environment performs four vital functions and the environment is able to perform these functions without any interruptions as long as the demand on these functions is within its carrying capacity. In the statement 'carrying capacity' implies to
(i) the resource extraction is not above the rate of regeneration.
(ii) wastes generated are beyond the absorptive capacity of the environment.
(iii) the resource extraction is not below the rate of regeneration.
(iv) the resource and the waste generated are within the assimilating capacity of the environment.

Alternatives
(a) (i), (ii) and (iv)
(b) Both (ii) and (iv)
(c) Both (i) and (iv)
(d) All of the above

Ans. (c) Both (i) and (iv)

4. Out of the following, what is/are the correct reason(s) of high opportunity cost of negative environmental impact?
(a) Spending amount on technology and research to explore alternative resource
(b) Health cost of degraded environmental quality
(c) Global warming
(d) All of the above

Ans. (d) All of the above

5. What do we mean when we say "Think Globally, Act Locally" in relation to environmental problems?
(a) Global environmental problems are essential issues
(b) Environmental problems have to be thought at a global level
(c) Extensive research and thinking has been carried out by global level
(d) Think about global impact of local activities

Ans. (d) Think about global impact of local activities

6. Match the following.

Column I		Column II
A. Global warming	(i)	Caused by rising population consumption
B. Ozone depletion	(ii)	Caused by high level of chlorine and bromine
C. Environmental crisis	(iii)	Gradual increase in average temperature of earth

Codes

	A	B	C		A	B	C
(a)	(i)	(ii)	(iii)	(b)	(iii)	(ii)	(i)
(c)	(ii)	(i)	(iii)	(d)	(i)	(iii)	(ii)

Ans. (b) (iii) (ii) (i)

7. What are the consequences of environmental crisis?
(a) Polluted and dried up rivers and other aquifers
(b) Extinction of vital resources
(c) Decline in air and water quality
(d) All of the above

Ans. (d) All of the above

8. Global warming is mainly caused by …… .
(a) burning of coal and petroleum products
(b) deforestation
(c) release of methane gas from animal waste
(d) All of the above

Ans. (d) All of the above

9. Mercury and lead are toxic elements that cause …… .
(a) land contamination (b) air pollution
(c) water pollution (d) noise pollution

Ans. (a) land contamination

10. Which of the following is not used as a strategy for sustainable development? **(CBSE 2020)**
(a) Use of bio-gas
(b) Use of solar power
(c) Use of thermal power
(d) Use of hydel power

Ans. (c) For thermal power, water is heated with the help of coal. As coal is non-renewable source of energy, so using it can't be beneficial in sustainable development.

11. Use of which of the following has resulted in a sufficient reduction in Delhi's pollution?
(a) LPG at homes
(b) Solar cell for electricity
(c) Thermal power plant
(d) CNG in public transport

Ans. (d) CNG in public transport

12. Which of the following is not a part of sustainable development goal target to be achieved by 2030?
(a) Providing free primary and secondary schooling to all boys and girls
(b) Universal access to a quality higher education
(c) Equal access to affordable vocational training
(d) Free higher education to all

Ans. (d) Free higher education to all

13. With reference to solar water pumps, consider the following statements.
(i) Solar power can be used for running surface pumps and not for submersible pumps.
(ii) Solar power can be used for running centrifugal pumps and not the one with piston.

Which of the statements given above is/are correct?
(a) Only (i)
(b) Only (ii)
(c) Both (i) and (ii)
(d) Neither (i) nor (ii)

Ans. (d) Pumps can be classified as submersible and surface pumps based on their placement. Solar power can be used for both running surface pumps and for submersible pumps. The pumping action is cyclic and can be driven by piston, screw, gear, roller, diaphragm and vanes.

14. Which household waste has an excellent recycling potential?
(a) Vegetable scraps (b) Metal
(c) Plastic (d) Rubber

Ans. (a) Vegetable scraps

15. Use of non-conventional sources of energy is strategy for sustainable development. Out of the following, which are the non-conventional sources of energy?
(i) Crude oil (ii) Solar
(iii) Wind (iv) Wood
(v) Coal (vi) Nuclear

Alternatives
(a) (ii), (iv), (vi) and (v)
(b) (ii), (iii), (iv), (v) and (vi)
(c) (i), (ii), (iii), (iv), (v) and (vi)
(d) (ii), (iii) and (vi)

Ans. (d) (ii), (iii) and (vi)

16. Environment has many resources for us. A resource that can be totally replaced or is always available naturally, or that is practically inexhaustible is known as …… .
(a) Conventional resource
(b) Renewable resource
(c) Non-renewable resource
(d) Non-conventional resource

Ans. (b) Renewable resource

17. After mining, the huge holes left behind are used for …… .
(a) waste water storage (b) waste and water storage
(c) waste disposal (d) waste storage

Ans. (c) waste disposal

18. What is the other word for landscaping?
(a) Reduction (b) Restoration
(c) Removing topsoil (d) Restore

Ans. (b) Restoration

19. What does a firm seek for when the price of the mineral remain high?
(a) New countries (b) Remains the same
(c) New miners (d) New deposits

Ans. (d) New deposits

20. Which of the following options is/are correct when we only accomplish two out of three pillars of sustainable development?
(a) Economic+ Environmental Sustainability = Viable
(b) Social + Environmental Sustainability = Bearable
(c) Social + Economic Sustainability = Equitable
(d) All of the above

Ans. (d) All of the above

• Assertion-Reasoning MCQs

Directions (Q. Nos. 1 to 7) *There are two statements marked as Assertion (A) and Reason (R). Read the statements and choose the appropriate option from options given below*

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A)

(c) Assertion (A) is true, but Reason (R) is false

(d) Assertion (A) is false, but Reason (R) is true

1. **Assertion** (A) Presently, global atmosphere is warming up.

Reason (R) The depletion of stratospheric ozone layer has resulted in increase in ultraviolet radiations reaching the earth.

Ans. (b) Global warming is the overheating of the earth due to the increased concentration of greenhouse gases. Greenhouse gases generally trap the radiation of the earth which leads to increase in the temperature of the earth and global warming.

2. **Assertion** (A) The crude oil reserves are going down for the entire world and the countries need to find substitute fuel for crude oil.

Reason (R) A country that is dependent on import for crude oil will demand more crude oil in future.

Ans. (b) This is because, if the crude oil reserves gets depleted then it will be necessary to find an alternative sources and the countries depending on other countries for crude oil will demand more.

3. **Assertion** (A) Sustainable development is essential for economic growth of the country.

Reason (R) Sustainable development ensures that environment friendly measures are adopted for carrying out production process.

Ans. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)

4. **Assertion** (A) Sustainable development must be adopted to save environment from degradation.

Reason (R) It is a matter of discussion among different countries of the world.

Ans. (c) Assertion (A) is true, but Reason (R) is false

5. **Assertion** (A) Sustainable development is critical to well-being of human society.

Reason (R) Environmentally sound policies do not harm the environment or deplete the natural resources.

Ans. (b) A sustainable society focuses on the current and future well-being of its citizen and the environment. Presently, our national policies are dedicated to producing the highest possible rate of economic growth and consumption while environmental sound policy do not harm the environment or deplete the natural resources.

6. **Assertion** (A) Non-renewable resources are abundant in nature.

Reason (R) Non-renewable resources will get exhausted after several years of usage.

Ans. (d) Non- renewable resources are fixed in amount and will get exhausted after several years of usage.

7. **Assertion** (A) All resources are not exhaustible.

Reasoning (R) Renewable resources can become non-renewable.

Ans. (b) Depending upon the abundance and availability, natural resources are classified into two categories i.e, exhaustible and inexhaustible. Few examples of inexhaustible resources are air, clay and fungi.

• Case Based MCQs

1. **Direction** *Read the following text and answer the question no. (i) to (vi) on the basis of the same.*

In recent years, awareness of the harmful effect of chemical-based fertilizers and pesticides on our health is on a rise. Conventional agriculture relies heavily on chemical fertilizers and toxic pesticides etc., which enter the food supply, penetrate the water sources, harm the livestock, deplete the soil and devastate natural eco-systems.

Efforts in evolving technologies which are eco-friendly, are essential for sustainable development and one such technology which is eco-friendly is organic farming.

In short, organic agriculture is a whole system of farming that restores, maintains and enhances the ecological balance. There is an increasing demand for organically grown food to enhance food safety throughout the world.

(i) In context of sustainable development, which of the following is/are strategies to achieve it?

(a) Use of sustained methods of farming

(b) Use of bio-pest

(c) Use of natural manure

(d) All of the above

Ans. (d) All of the above

(ii) Green revolution was a major reason of rise in productivity of farming. What are the advantages of conventional farming methods?

(a) Higher output

(b) Cost effective

(c) Wider range

(d) All of the above

Ans. (d) All of the above

(iii) ..... is more popular non-farm activity after farming.

(a) Horticulture (b) Pisciculture
(c) Plantation (d) Animal husbandry

Ans. (b) Pisciculture

(iv) ..... helps in maintaining ecological balance.

(a) Organic food (b) Conventional food
(c) Dairy (d) Protein

Ans. (a) Organic food

(v) **Assertion** (A) A country rich in natural resources has mainly relied on oil extraction for revenue generation. However, scientists predict that the country may become poor in the future if other means of generating income are not devised.

Reason (R) Oil is a non-renewable resource, and it is likely to get exhausted if not used judiciously.

Alternatives

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(c) Assertion (A) is false, but Reason (R) is true
(d) Both the statements are false

Ans. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(vi) Which of the following statements is/are correct?

(i) Sustainable development is synonymous with the conservation of the environment.
(ii) The environment is able to perform its functions without any interruption as long as the resource extraction increases the rate of regeneration.

Alternatives

(a) Both are true
(b) Both are false
(c) (i) is true, but (ii) is false
(d) (i) is false, but (ii) is true

Ans. (a) The environment is able to perform its functions without any interruption as long as the resource extraction does not exceed the rate of regeneration.

2. Direction *Read the following text and answer the question no. (i) to (vi) on the basis of the same.*

Sustainable development is synonymous in the minds of many with the colour green and for good reason. Twenty years ago, at the first Earth Summit in Rio de Janeiro, leaders set out what today is conventional wisdom human progress—both social and economic—cannot be divorced from environmental protection. Unless both are advanced together, both will flounder or fail.

Sustainable development is as much about health, education and jobs, as it is about ecosystems. It is about ever widening inclusion and movement away from decisions that erode democratic space and do not address social inequality, intolerance and violence. Sustainable development is about change that transforms impoverished peoples, communities and countries into informed, educated, healthy and productive societies. It is about wealth creation that generates equality and opportunity; it is about consumption and production patterns that respect planetary boundaries; it is about increasing tolerance and respect for human rights.

Building on the human development legacy that originated with Amartya Sen and Mahbub-Ul-Haq and was captured by the first human development report in 1990, UNDP has long promoted alternative approaches to measuring human progress, including with the human development index. Today, we are building on this legacy by exploring how to adjust the index to reflect environmental sustainability, so that governments and citizens might better track real progress towards truly sustainable development. This must be our collective objective.

Source *UNDP Report, June, 2012*

(i) Which of the following are ways to attain the goal of sustainable development?

(a) Use of cleaner fuels
(b) Use of traditional knowledge and practices
(c) Spreading awareness
(d) All of the above

Ans. (d) All of the above

(ii) As per United Nations, following is/are the broader issue(s) of human development?

(a) Education
(b) Public health
(c) Standard of living
(d) All of the above

Ans. (d) All of the above

(iii) The word 'Sustainable Development' came in existence in ..... .

(a) 1980 (b) 1982
(c) 1987 (d) 1990

Ans. (a) 1980

(iv) Sustainable development and economic growth ..... proportional.

(a) directly
(b) increasing
(c) indirectly
(d) decreasing

Ans. (a) directly

(v) **Assertion** (A) Sustainable development is about changes that transform impoverished people, communities, and countries into informed, educated, healthy and productive societies.

Reason (R) Sustainable development advocates about wealth creation that generates socio-economic equality and opportunity.

Alternatives

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(c) Assertion (A) is false, but Reason (R) is true
(d) Both the statements are false

Ans. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(vi) The Sustainable Development Goals (SDGs) recognise that all countries must stimulate action in the following key areas

(a) people, planet, prosperity, peace and partnership.
(b) people, planet, prosperity, plants and planning.
(c) people, planet, prosperity, plants and partnership.
(d) people, planet, prosperity, peace and planning.

Ans. (a) people, planet, prosperity, peace and partnership

3. Direction *Read the following text and answer the question no. (i) to (vi) on the basis of the same.*

Along with being a basic human need, water is also a basic constituent for the survival of eco-systems of which people and their cultures are important components. The water resources distribution in India, predominantly an agrarian economy, is highly asymmetric and has been accompanied by severe decline in per capita water availability during the past 50 years, with agriculture being the maximum water user, leading to over-exploitation of ground water and steadily depleting water tables along with a heavy energy bill.

Gujarat State falls in a water stressed zone of the country and is also the victim of intra-state asymmetric water availability leading to an unwanted socio-economic disparity, with the following results

A poor literacy rate in water-deficit districts; concentration of industry and housing in regions with better water resources endowment; and demographic change, e.g. the shift of the prime workforce from drought-prone districts to water-surplus districts. This in turn denies the right to life, development, health, food, education and work for these migrant communities.

To ensure a balanced development when there is less than one acre per capita of cultivable landholding and over 14,000 villages out of 18,563 are suffering from water scarcity, there is no other alternative but to transfer water from surplus to scarce areas of the state.

(i) Which of the following is/are not an objective(s) of sustainable development?

(a) Control over growth rate of population
(b) Maintain ecological balance
(c) Maintain a dynamic balance of water resources by reducing water consumption
(d) To bring about a gradual and sometimes, catastrophic transformation of environment

Ans. (d) To bring about a gradual and sometimes, catastrophic transformation of environment

(ii) Which of the following is not included in the strategies of sustainable development?

(a) Maintain carrying capacity of environment
(b) Maintain inter and intra-generation equity
(c) Bring gender disparity and diversity
(d) None of the above

Ans. (d) None of the above

(iii) The …… commission emphasises on protecting the future generation.

(a) Brundtland
(b) Mundell
(c) Indian
(d) French

Ans. (a) Brundtland

(iv) Water is an important resource for all biotic components. Over use of water has posed a serious threat on the future generations. Which of the following measures can be taken to improve availability of water across generations?

(a) Encouraging rain water harvesting
(b) Check on overuse of ground water level
(c) Spreading awareness about water conservation
(d) All of the above

Ans. (d) All of the above

(v) **Assertion** (A) Environmentalists have used the term sustainability in an attempt to classify the defined balance between economic growth and environment conservation.

Reason (R) A developmental path is sustainable if the stock of overall capital assets remains constant or increases over time.

Alternatives

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(c) Assertion (A) is false, but Reason (R) is true
(d) Both the statements are false

Ans. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(vi) Match the following

	Column I		Column II
A.	Condition of sustainable development	(i)	Industrial machines
B.	Reason for noise pollution	(ii)	Long term increase in real per capital income
C.	Cause of environmental degradation	(iii)	Reduction in level of pollution.
D.	Non-renewable resources	(iv)	Rapid industrialisation
E.	Economic growth	(v)	Exhausted after use

Codes

	A	B	C	D	E
(a)	(ii)	(iv)	(i)	(v)	(iii)
(b)	(i)	(ii)	(iii)	(iv)	(v)
(c)	(iii)	(i)	(iv)	(v)	(ii)
(d)	(v)	(iv)	(iii)	(ii)	(i)

Ans. (c) (iii) (i) (iv) (v) (ii)

PART 2
Subjective Questions

• Short Answer (SA) Type Questions

1. (i) What is meant by environment?
(ii) What happens when the rate of resource extraction exceeds that of their regeneration? **(NCERT)**

Ans. (i) Environment is defined as the total planetary inheritance or the totality of all resources. It includes all biotic (birds, animals, plants, forest, etc.) and a abiotic (water, sun, land, mountains, etc.) factors that influence or depend on each other.

(ii) When the rate of resource extraction exceeds that of regeneration, then environment fails to perform its important functions and it leads to the situation of environmental crisis.

2. What are the functions of the environment? **(NCERT)**

Ans. The environment performs four important functions

(i) It supplies resources, both renewable and non-renewable resources.
(ii) It absorbs waste.
(iii) It sustains life by providing genetic and biodiversity.
(iv) It also provides aesthetic services like scenery, etc.

3. Explain how the opportunity costs of negative environmental impacts are high? **(NCERT)**

Ans. Opportunity cost of negative environmental impacts are high in terms of the following

(i) The past development has polluted and dried up rivers and other acquifers making water an economic good.
(ii) Due to excessive utilisation of natural resources', we are compelled to spend huge amount of money on technology and research to discover new resources.
(iii) Health cost of degraded environment is rising.
(iv) Global environmental issues such as global warming and ozone depletion have also contributed to increased financial commitments for the government.

4. Is environmental crisis a recent phenomenon? If so, why? **(NCERT)**

Ans. Yes, environmental crisis is a recent phenomenon. In early days, when civilisation just began, before the phenomenal increase in population and growth of industrialisation, the demand for environmental resources was within the carrying capacity of the environment and so the pollution was also within the absorptive capacity of the environment. Therefore, environmental problems did not arise.

But with the advent of the industrialisation and out break of the population, environmental problems arisen and the resources for both production and consumption proved to be beyond the rate of regeneration of the resources and the absorptive capacity of the environment.

5. Write a brief note on ozone depletion.

Ans. Ozone depletion means the thinning of the ozone layer present in the upper atmosphere which is harmful to the nature and atmosphere. Ozone layer depletion is one of the major problem for all the living beings including flora and fauna on this earth. These ozone depletion substances float and then reach the stratosphere.

Therefore, the formation of chlorine and bromine takes place and these chemicals causes the depletion of the ozone layer at a very high speed. They are capable of breaking down the molecules of the ozone layer. One chlorine molecule has the capacity to breakdown thousands of molecules present in ozone layer.

6. "India has abundant natural resources". Substantiate the statement. **(NCERT)**

Ans. India has plenty of natural resources at its disposal. This becomes clear from the following facts

(i) India has abundant natural resources in terms of rich quality of soil, hundred of rivers and tributaries, lost green forests, plenty of mineral deposits beneath the land surface, vast stretch of the Indian ocean, ranges of mountains, etc.

(ii) The black soil of the Deccan plateau is particularly suitable for cultivation of cotton, leading to concentration of textile industries in this region.

(iii) The Indo-Gangetic plains spread from the Arabian sea to the Bay of Bengal are one of the most fertile intensively cultivated and densely populated regions in the world.

(iv) India alone accounts for nearly 20% of the world's total iron-ore reserve. Bauxite, copper, chromate, diamonds, gold, lead, lignite, manganese, zinc, uranium, etc. are also available in different parts of the country. However, the developmental activities in India have resulted in pressure on its finite natural resources besides creating impacts on human health and well being.

7. (i) State any four pressing environmental concerns of India.

(ii) Correction for environment damages involves opportunity costs. Explain. **(NCERT)**

Ans. (i) Four pressing environmental concerns of India are

(a) Land degradation and solid waste management

(b) Bio-diversity loss

(c) Air pollution with special reference to vehicular pollution in urban cities

(d) Management of fresh water.

(ii) Correction for environmental damages involves opportunity costs as the industrial development in past has polluted and dried up rivers and other aquifers making water an economic good.

8. Write a brief note on global warming.

Ans. Global warming refers to the increase in average global temperature since the industrial revolution. The average global temperature has increased by about one degree celsius (1.8 degrees fahrenheit) since 1880. Global warming is an ongoing process; scientists expect the average global temperature to rise an additional 0.3 to 0.7 degrees celsius (0.54–1.26 degrees fahrenheit) through 2035. Higher concentrations of these greenhouse gases in the atmosphere trap more heat on earth, causing an anthropogenic (i.e., human-caused) rise in global temperatures. Climate scientists agree that human activity is the main driver behind the global warming we are experiencing.

9. Identify six factors contributing to land degradation in India. **(NCERT)**

Ans. Land degradation means loss of fertility of land. Six of the factors responsible for land degradation are

(i) Loss of vegetation occurring due to deforestation.

(ii) Unsustainable fuel, wood and fodder extinction.

(iii) Extraction of groundwater in excess of the recharge capacity.

(iv) Non-adoption of adequate soil conservation measures.

(v) Improper crop rotation.

(vi) Indiscriminate use of agro chemicals such as fertilizers and pesticides.

10. Give two instances of

(i) overuse of environmental resources.

(ii) misuse of environmental resources. **(NCERT)**

Ans. Instances of overuse of environmental resources and misuse of environmental resources are as under

(i) Overuse of environmental resources

(a) Soil degradation due to improper crop rotation and crop shifting.

(b) Drying up of rivers due to overuse of water from them through dams and reservoirs.

(ii) Misuse of environmental resources

(a) Excess use of electricity leads to depletion of resources like coal and water from which electricity is generated.

(b) Excess use of petrol and diesel in vehicles.

11. Highlight any two serious adverse environmental consequences of development in India. India's environmental problems pose a dichotomy-they are poverty induced and at the same time arise due to affluence in living standards, is it true? **(NCERT)**

Ans. Two serious adverse environmental consequences of development in India are

(i) Land degradation (ii) Air pollution

Yes, it is true, the threat to India's environment is of two dimension- threat of poverty induced environmental degradation and the threat to pollution from affluence.

Environmental crisis is poverty induced in the sense that poor people depend on natural assets for their survival. They collect forest products and firewood for their survival. On the other hand, due to affluent consumption and production standards of the rich generate huge amount of wastes. For example, rich people in India own motor vehicles, air conditioners which heavily contribute to air pollution.

12. How has population explosion and the advent of industrial revolution resulted in environmental crisis?

Ans. With population explosion and with the advent of industrial revolution, to meet the growing needs of the expanding population, the demand for resources for both production and consumption has gone beyond the rate of regeneration of the resources and due to this, the pressure on environment has increased tremendously. The increasing population has led to increased demand for housing and this has led to widespread deforestation.

In order to accelerate the process of industrialisation, natural resources are being used up at a much faster pace. We are now faced with increased demand for environmental resources and services but their supply is limited due to overuse and misuse of these resources. Hence, the environmental issues of waste generation and pollution have become critical today.

13. Explain the supply demand reversal of environmental resources.

Ans. Before the advent of the industrial revolution, the rate of resource extraction was less than the rate of regeneration of these resources, i.e., demand was less than supply. But with the expanding population and its growing needs, the demand for resources for both production and consumption went beyond the rate of regeneration of the resources. This has resulted in a reversal of supply-demand relationship for environmental resources as now there is very high demand for environmental resources and services, but their supply is limited and even these limited resources are being overused and misused.

14. "Sustainable development is a paradigm shift in development thinking". Comment.

Ans. Sustainable development implies meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life, without compromising the needs of future. The strategies for sustainable development imply the use of non-conventional sources of energy to minimise the adverse environmental impacts.

Promotion of natural resources, conservation, preserving regenerative capacity of ecological system and avoiding the imposition of environmental rules on future generations would lead to sustainable development.

15. Why is sustainable development so often associated with protecting the environment?

Ans. In the 1970s, environmental groups sounded the alarm about the boom in economic the environment. Their efforts to sensitise people to the ecological downside of development bore fruit and gradually there emerged an environmental awareness in societies around the world.

This explains why for many people, it is still a valid association. But sustainable development is really a much broader concept, which puts human beings at the heart of decision-making. It brings a new way of conceiving and carrying. In the 1980s, the concept of sustainable development was associated with protecting the environment and development in which economic, social and environmental considerations are all taken into account.

16. Explain the relevance of intergenerational equity in the definition of sustainable development. **(NCERT)**

Ans. Sustainable development is the development that meets the needs of the present generation without compromising the ability of the future generation to meet their own needs. This definition of sustainable development is most appropriate and justified.

Future generation have also the right to enjoy the same quality of life that is enjoyed by the present generation. Hence, future generation should not suffer at the cost of present generation well-being.

17. Distinguish between economic development and sustainable development.

Ans.

Basis	Economic Developement	Sustainable Developement
Concept	It refers to long term increase in national income and per capita income.	It implies an increase in national income and welfare of both the present as well as future generations.
Environment Protection	It does not take into account pollution and environmental protection.	It emphasises on environmental protection.
Exploitation of Natural Resources	In the process, natural resources are exploited.	In the process, natural resources are rationally utilised to give benefits to the future generation.

• Long Answer (LA) Type Questions

1. "Today development has become a burden on nature/environment". Comment.

Ans. The present thinking with regard to relationship between nature and development is that there should be maximum exploitation of natural resources for development. As a result, people are using nature beyond its carrying capacity. Our present technology is creating a number of environmental problems. A number of non-degradable materials are being produced in present day through the production technology. Following are the some important reasons responsible for the heavy burden on nature

(i) Rise in human population in underdeveloped countries.

(ii) Affluent consumption style in developed countries.

(iii) Misuse of production technology in almost all the countries and poor planning of development.

As a result of above, there is a reckless use of resources creating negative effects on the society.

The negative effects of development on nature are:

(i) Pollution (ii) Degradation of resources

2. What is meant by global warming? Give any five effects of global warming.

Ans. The gradual increase in average temperature of Earth's lower temperature is called global warming.

Different effects of global warming are described below

(i) During the past century the atmospheric temperature has risen by 1.10°F (0.60°C).

(ii) Melting of polar ice resulted in increase in sea level (during the past century, sea level has risen by several inches) and the risk of coastal flooding has increased.

(iii) Disruption of drinking water supplies, dependent on snow melts.

(iv) Extinction of species.

(v) More frequent tropical storms.

3. How do the following factors contribute to the environmental crisis in India? What problem do they pose for the government? **(NCERT)**

(i) Rising population

(ii) Air pollution

(iii) Water contamination

(iv) Affluent consumption standards

(v) Illiteracy

(vi) Industrialisation

(vii) Urbanisation

(viii) Reduction of forest coverage

(ix) Poaching

(x) Global warming

Ans. (i) **Rising Population** The high rate of growth of population adversely affects the environment. It certainly leads to soil and water pollution.

(ii) **Air Pollution** India is one of the ten most industrialised nations of the world. It has led to unplanned urbanisation, pollution and the risk of accidents. The CPCB (Central Pollution Control Board) has identified 17 categories of industries which are significant polluters.

(iii) **Water Contamination** Many states in India are on the edge of famine. Whatever water is available, it is polluted or contaminated. It causes diseases like diarrheao and hepatitis.

(iv) **Affluent Consumption Standards** With affluent consumption standards, people use more air conditioners. CFCs are used as cooling agents in air conditioers which leads to ozone depletion.

(v) **Illiteracy** Illiteracy and ignorance about the use of non- renewable resources and alternative energy sources, lead to environmental crisis.

(vi) **Industrialisation** With rise in national income or economic activity, there is rise in industrialisation and urbanisation. This raises pollution of air, water and noise. There are accidents, shortage of water, housing problems, etc. In other words, with rise in national income, there is ecological degradation which reduces welfare of the people.

(vii) **Urbanisation** Whenever there is large migration of population from rural to urban areas, it leads to fast growth of slum areas. There is excess of load on the existing infrastructural facilities. It causes environmental degradation and ill-health.

(viii) **Reduction of Forest Coverage** The per capita forest land in the country is only 0.08 hectare. There is an excess felling of about 15 million cubic meter forests over the permissible limit.

Indiscriminate felling of trees has led to destruction of forest cover.

Once forests have been cut down, essential nutrients are washed out of the soil all-together. This leads to soil erosion. It leads to disastrous flooding since there is no soil to soak up the rain.

(ix) **Poaching** Poaching leads to extinction of wildlife. Generally, wild species which are endangered are poached leading to the danger of them becoming extinct.

(x) **Global Warming** The long-term results of global warming are

(a) Melting of polar ice caps with a resulting rise in the sea level and coastal flooding.

(b) Disruption of drinking water supplies as snow melts.

4. Outline the steps involved in attaining sustainable development in India.

Ans. Sustainable development refers to the achievement of economic development by careful and judicial utilisation of the natural resources so that the present generation needs are fulfilled without compromising that of the future generations'. Aligned with the view of a leading environmental economist, Herman Daly, India has taken the following steps to achieve the aim of sustainable development

(i) **Population Control Measure** India has promoted various measures to arrest population explosion. The various population control measures include spread of awareness and knowledge of birth control measures and literacy.

(ii) **Use of Environment Supportive Fuel** As the fuels such as petrol and diesel emit huge amount of carbon dioxide that leads to global warming so, the Indian government has promoted the use of CNG and LPG. These clean, eco-friendly fuels emit lesser smoke.

(iii) **Use of Solar and Wind Energy** India, being a moderate country, is enriched with sunlight and wind power. These are two free gifts of nature are non-exhaustible. It solves the problem of economic growth with due focus on sustainable development.

(iv) **Recycling and Ban on Plastic Bags** The industrial and household wastes are accumulated on daily basis. There is a need to develop the habit of recycling of waste products in order to sustain the environment. Household waste can be used as manure for organic farming. A very recent step taken by the Indian government is banning the use of plastic bags. This is a very good step as plastic bags do not get decomposed easily and leads to pollution while recycling.

5. Briefly discuss any four strategies of sustainable development.

Ans. Four strategies of sustainable development are as follows

(i) **Use of Non-conventional Sources of Energy** India is hugely dependent on thermal and hydro power plants to meet its power needs. Both of these have adverse environmental impacts, thermal power plants emit large quantities of carbon dioxide which is a green house gas while hydroelectric project inundate forests and interfere with the natural flow of water in catchment areas and the river basins.

(ii) **LPG, Gobar Gas in Rural Areas** Households in rural areas generally use wood, dung cake or other bio-mass as fuel. This practice has several adverse implications like deforestation, reduction in green cover, wastage of cattle dung and air pollution. To rectify the situation, subsidised LPG is provided and gobar gas plants are provided. LPG is a clean fuel, which reduces household pollution to a large extent. Also, energy wastage is minimised.

(iii) **Solar Power through Photovoltaic Cells** India is naturally endowed with a large quantity of solar energy in the form of solar energy through sunlight. We use it in different ways.

For example, we use sunlight to get the clothes drains dried, to keep our body warm in winter with the help of photovoltaic cells, etc. Solar energy can be converted into electricity.

These cells use special kind of materials to capture solar energy and then convert the energy into electricity.

This energy is extremely useful for remote area and for place where supply of power through grid or power lines are either not possible or are very costly.

(iv) **Mini–hydel Plants** In mountainous regions, stream can be found almost everywhere. A large percentage of such streams are perennial. Mini-hydel plants use the energy of such streams to move small turbines which generate electricity that can be used locally.

Such power plants are more or less environment-friendly as they do not use pattern in areas where they are located.

They generate enough power to meet local demands. This shows that they can reduce the requirement of large scale transmission tower and cables and avoid transmission loss.

Chapter Test

Multiple Choice Questions

1. The maximum number of individual that can be supported by a given environment is called
(a) Biotic potential (b) Environmental resistance
(c) Carrying capacity (d) Population size

2. An adulterated element leak into the ground filtration and are carried into a ground water reservoir is known as ..... .
(a) Land contamination (b) Noise pollution
(c) Water pollution (d) Air pollution

3. When the consumption of natural resource is equal to the nature's ability to replenish, then sustainability is ..... .
(a) not sustainable (b) steady state economy
(c) environmentally sustainable (d) None of these

4. What is '3E'?
(a) Energy, Economy and Environment
(b) Reduce, Reuse and Recycle
(c) Energy, Economy and Envision
(d) Ergonomics, Evolution and Economy

5. Which of the following relates the three elements of '3E'?
(a) Energy from fossil fuels
(b) Energy from natural gas
(c) Renewable energy sources and technology
(d) Economy

Short Answer (SA) Type Questions

1. Explain carrying capacity of environment with examples.

2. How population growth is the cause of depletion of natural resources?

3. (i) How does thermal power plant cause pollution?
(ii) How do animals help in bio-pest control?

4. "Water has become an economic commodity." Justify the statement.

5. Explain the term 'affluence trap'.

Long Answer (LA) Type Questions

1. How does air pollution contribute to the environmental crisis in India?

2. Give the benefits and limitations of using solar power.

Answers

Multiple Choice Questions

1. *(c)* ***2.*** *(c)* ***3.*** *(b)* ***4.*** *(a)* ***5.*** *(c)*